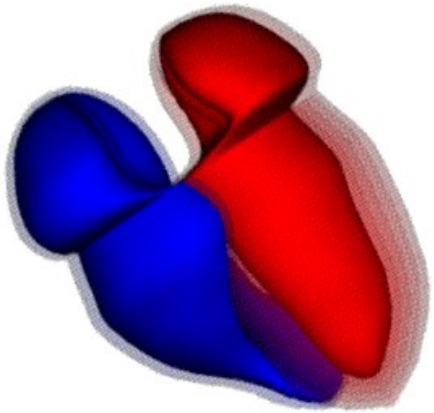
Armed Forces College of Medicine

AFCM

Anatomy Department/ Cardiopulmonary Module/ Prof Azza Kamal



THE Heart II
Internal Features
By
Prof Azza Kamal

Anatomy Department/ Cardiopulmonary
Module/ Prof Azza Kamal

ILO's

- **By the end of this lecture, each student should be able to:**

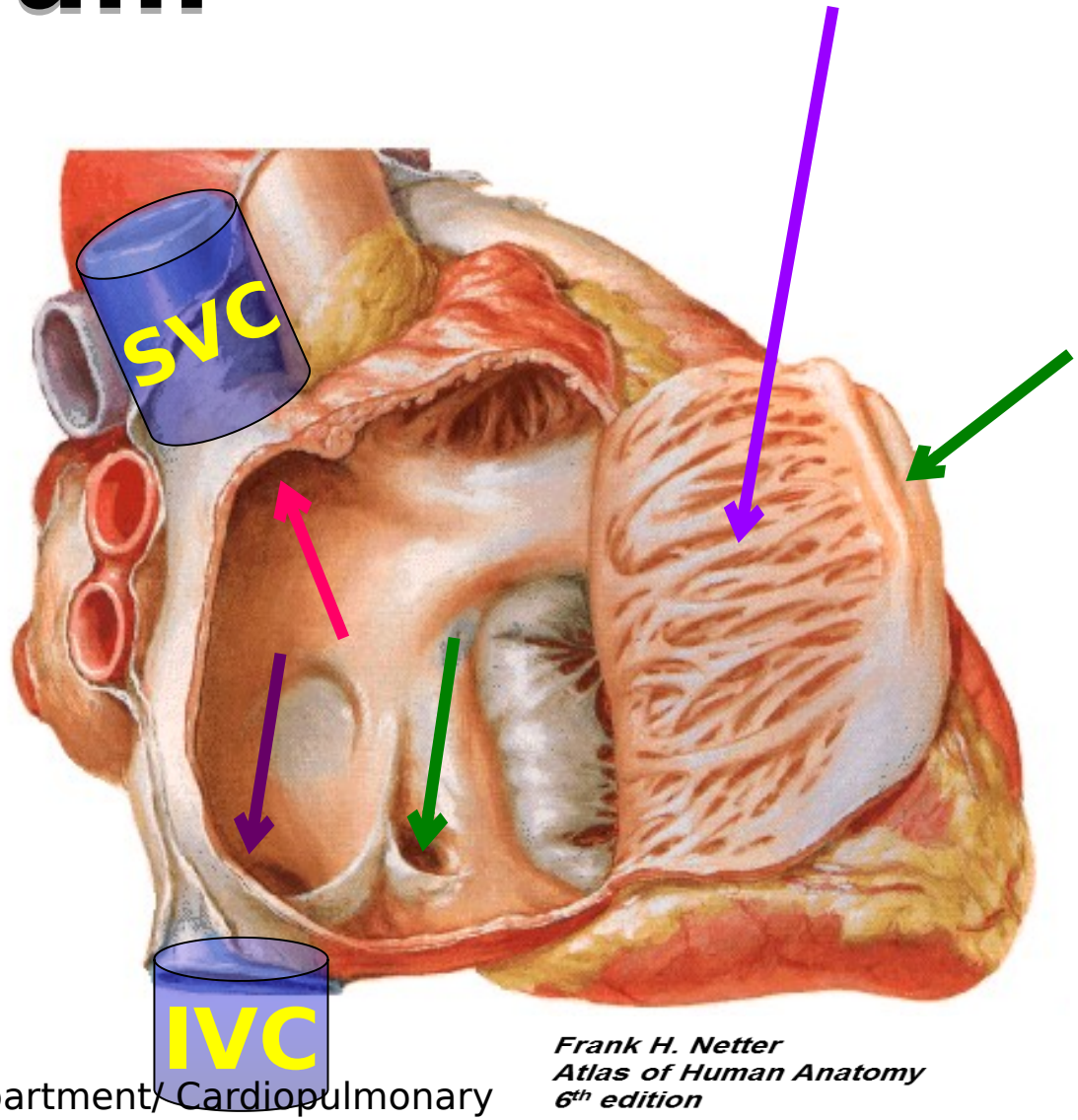
1. **Describe the internal features of the four chambers of the heart.**
2. **Outline the tricuspid, mitral, pulmonary and aortic valves.**
3. **Outline the interventricular septum.**
4. **Describe the conducting system of the heart.**
5. **Describe the surface markings of the cardiac valves and their auscultatory areas.**

Interior of right atrium

- **Divided by a muscular ridge (crista terminalis) into:**

a) **Anterior rough part musculae pectinatae**

b) **Posterior smooth part receives openings of SVC,IVC & coronary sinus & other smaller veins as venae**



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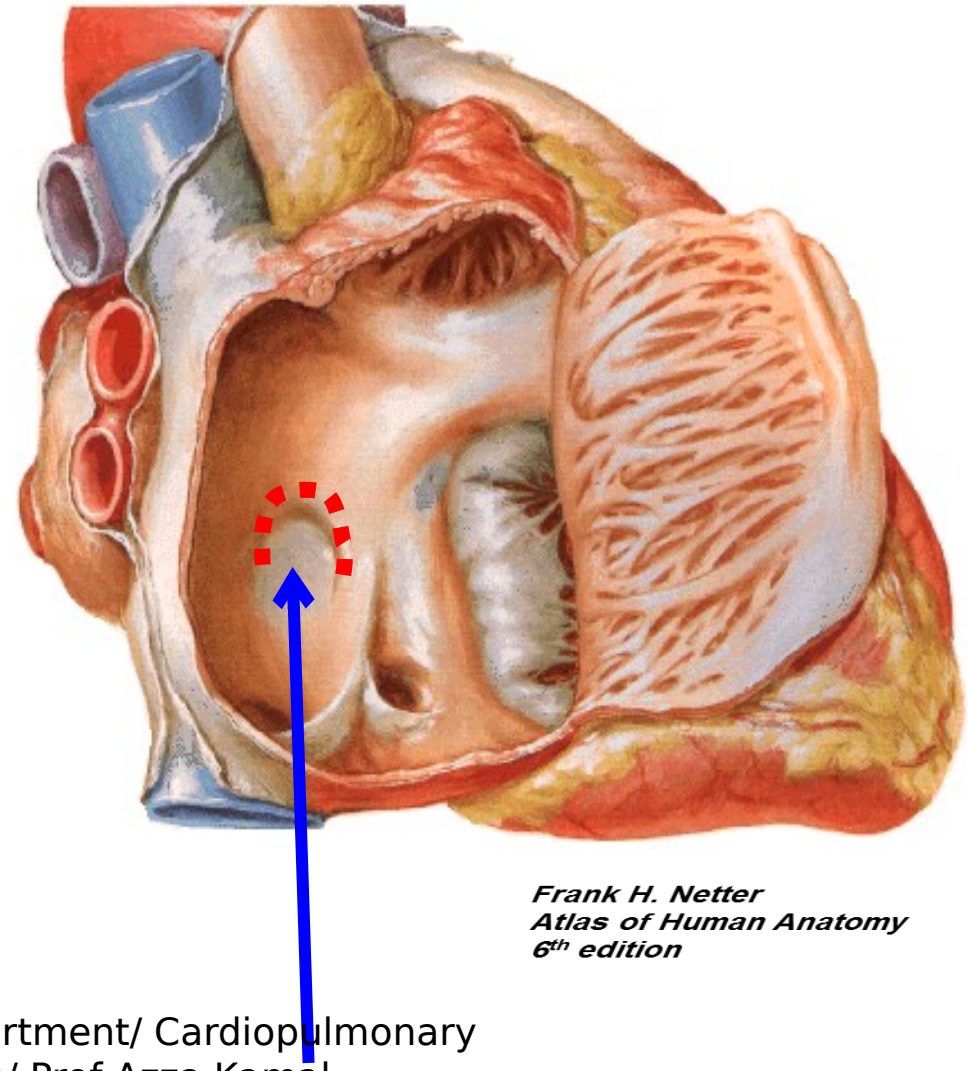
Interior of right atrium

- **Interatrial septum shows an oval depression fossa ovalis bounded above & on the sides by a raised margin called annulus ovalis**



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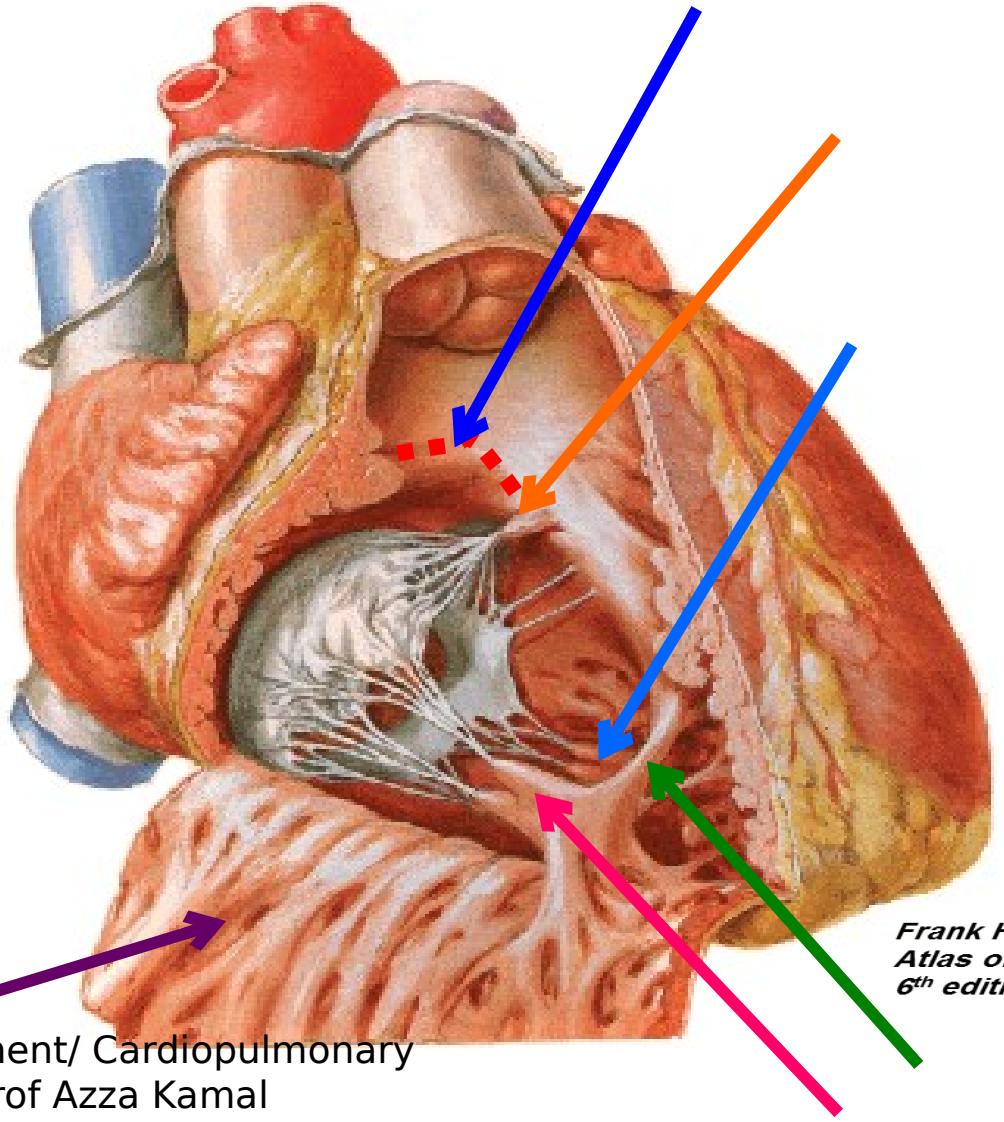
Interior of right ventricle

- **A supraventricular crest divides right ventricle into 2 parts**
  - **1) rough inflowing part**
  - **2) smooth outflowing part**



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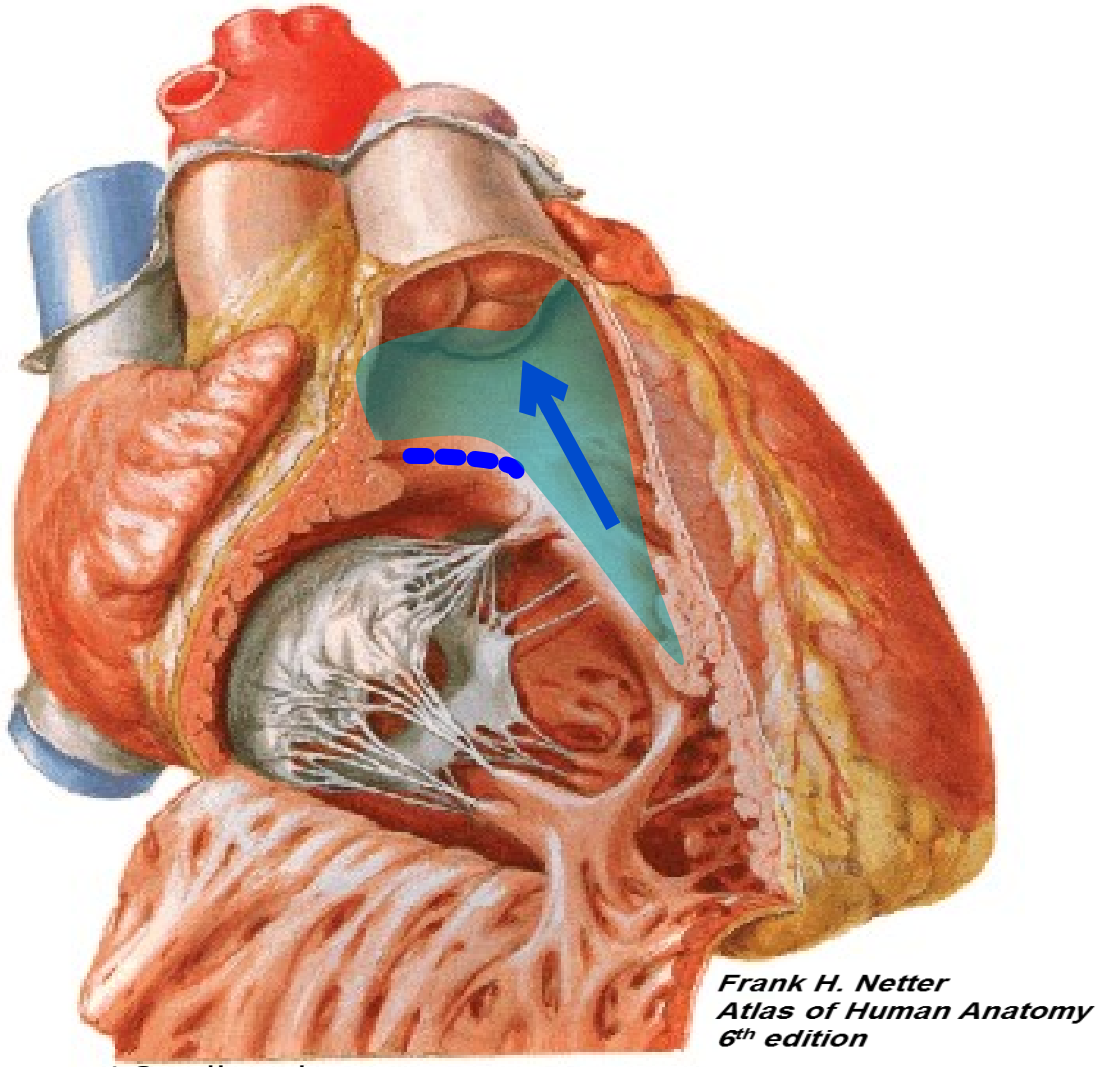
1. **Inflowing rough part below the crest receives non oxygenated blood from right atrium. Has rough walls due to presence of:**

a) Trabeculae carni

Interior of right ventricle

2. Outflowing smooth part :

- above supraventricular crest & called infundibulum
- Has pulmonary orifice & valve



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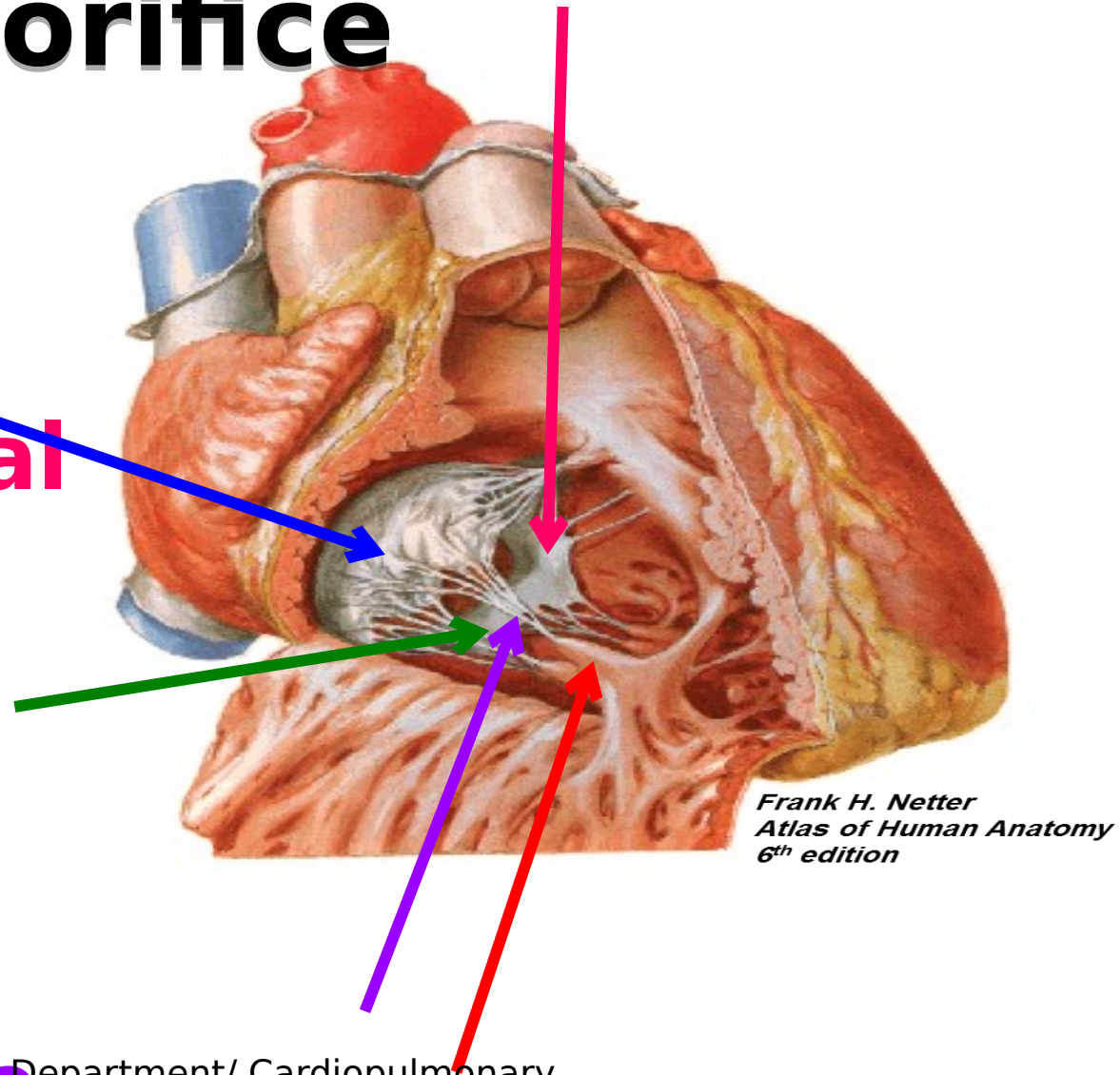
Right atrioventricular orifice

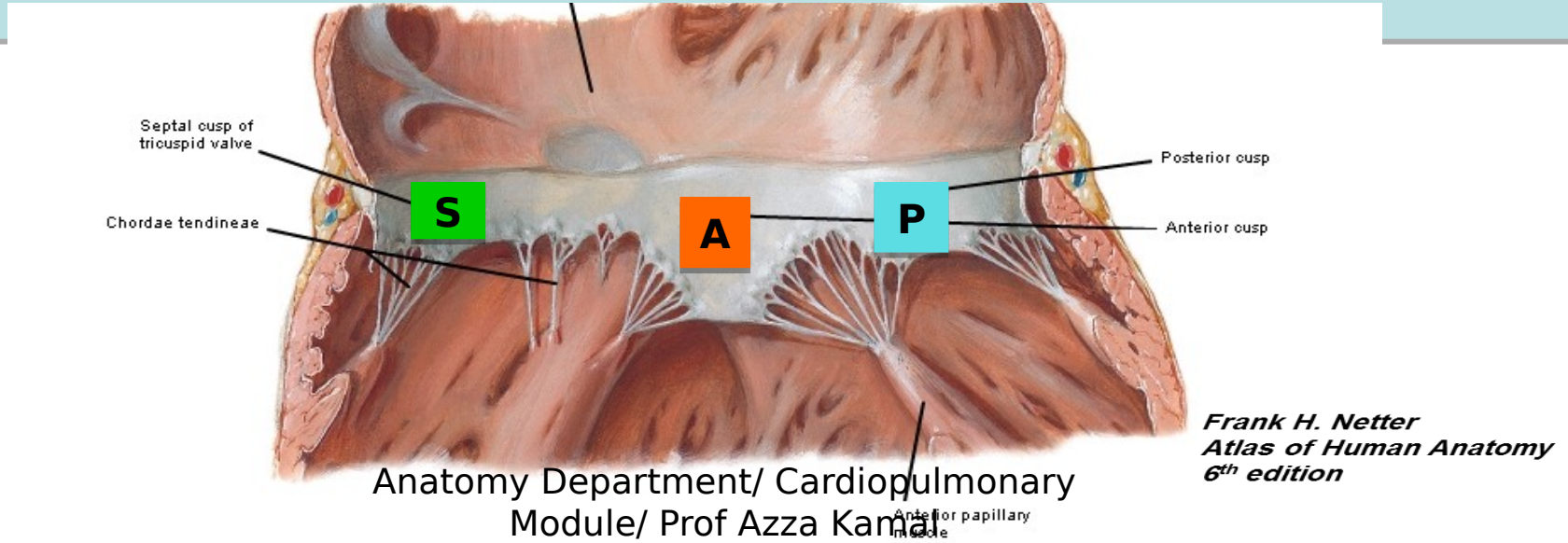
- Guarded by the tricuspid valve having 3 cusps anterior , posterior & septal cusps



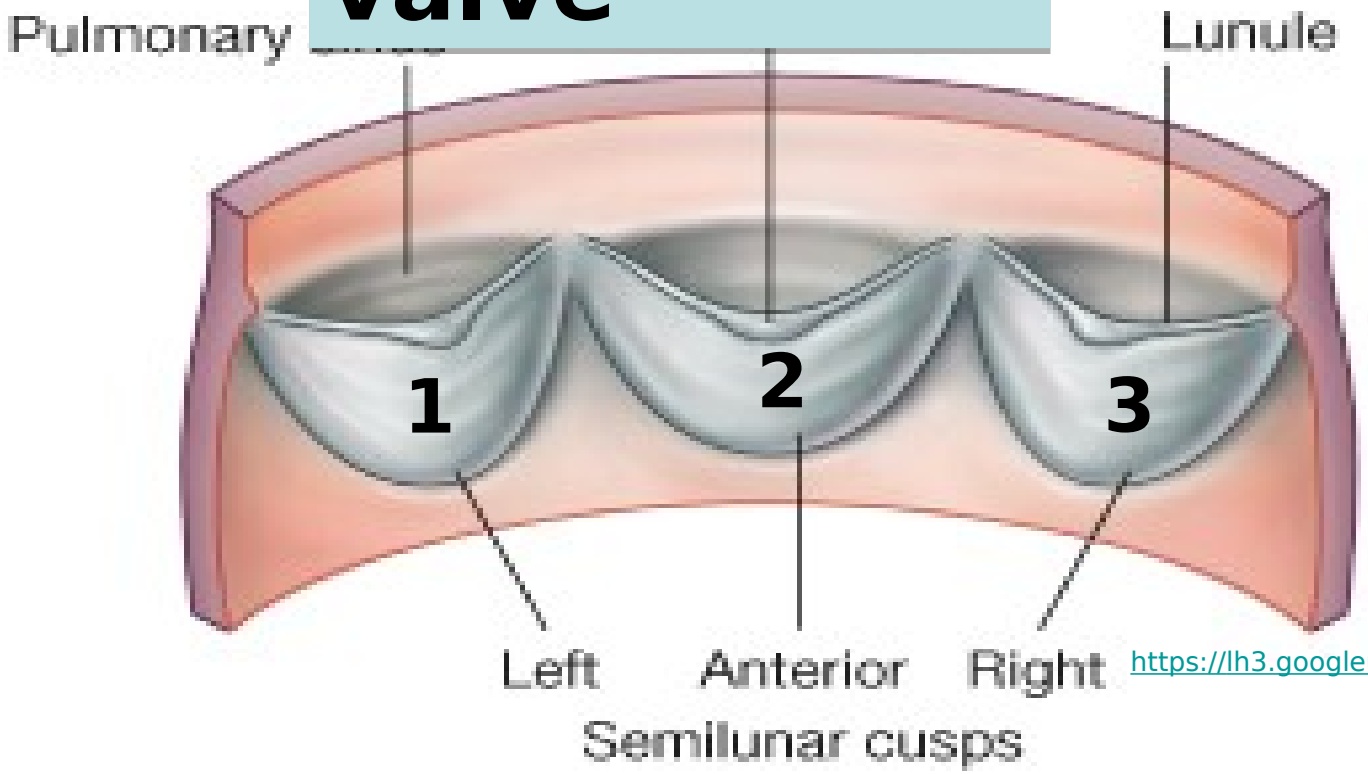
- Free margin of each cusp is attached by chordae tendinae

Tricuspid valve :

- Chordae tendinae are inelastic cords
- Papillary muscles contract when ventricles contract, this holds chordae tendinae and therefore cusps in place thus preventing ballooning of cusps into right atrium



Pulmonary valve



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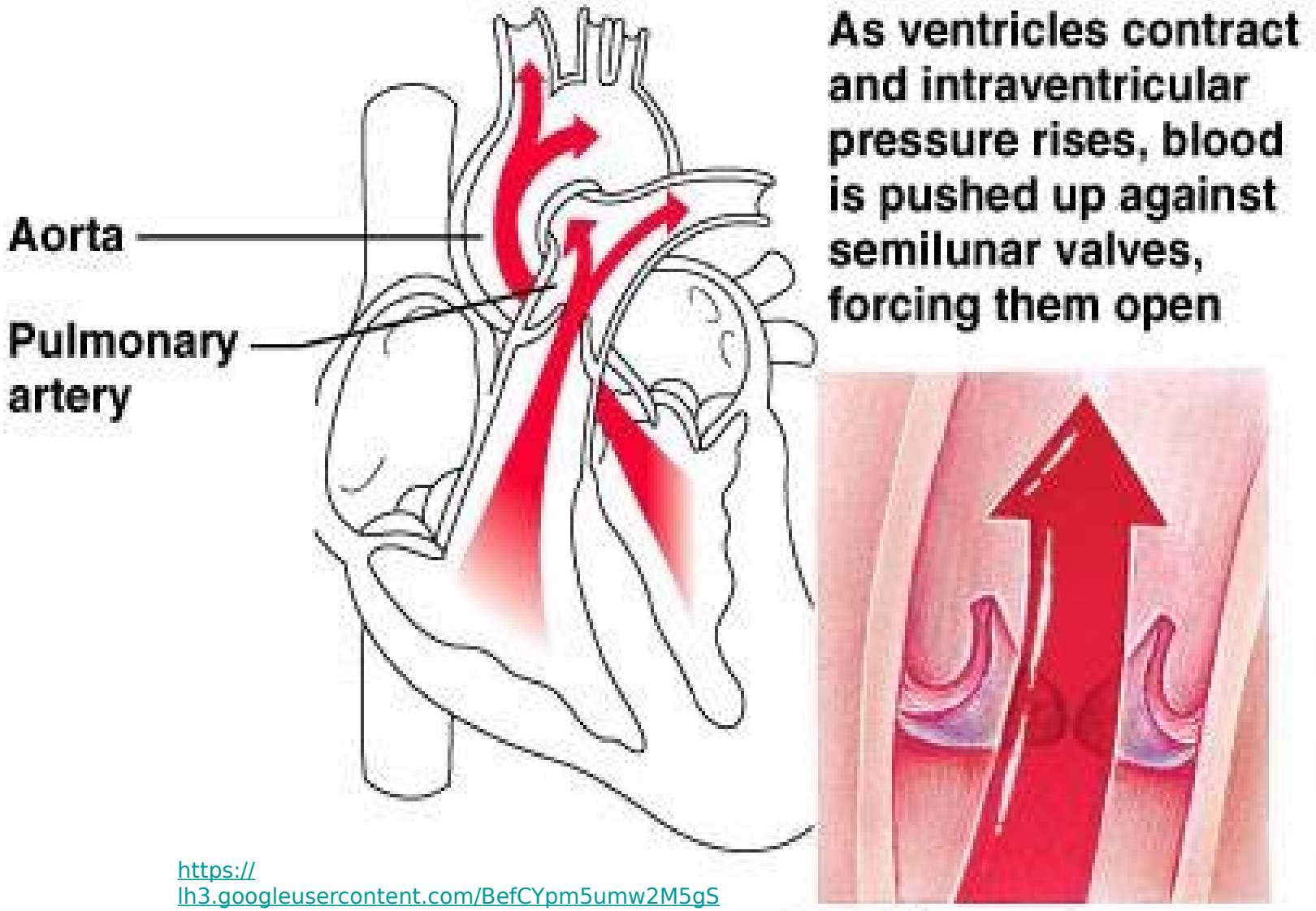
Has 3 semilunar cusps



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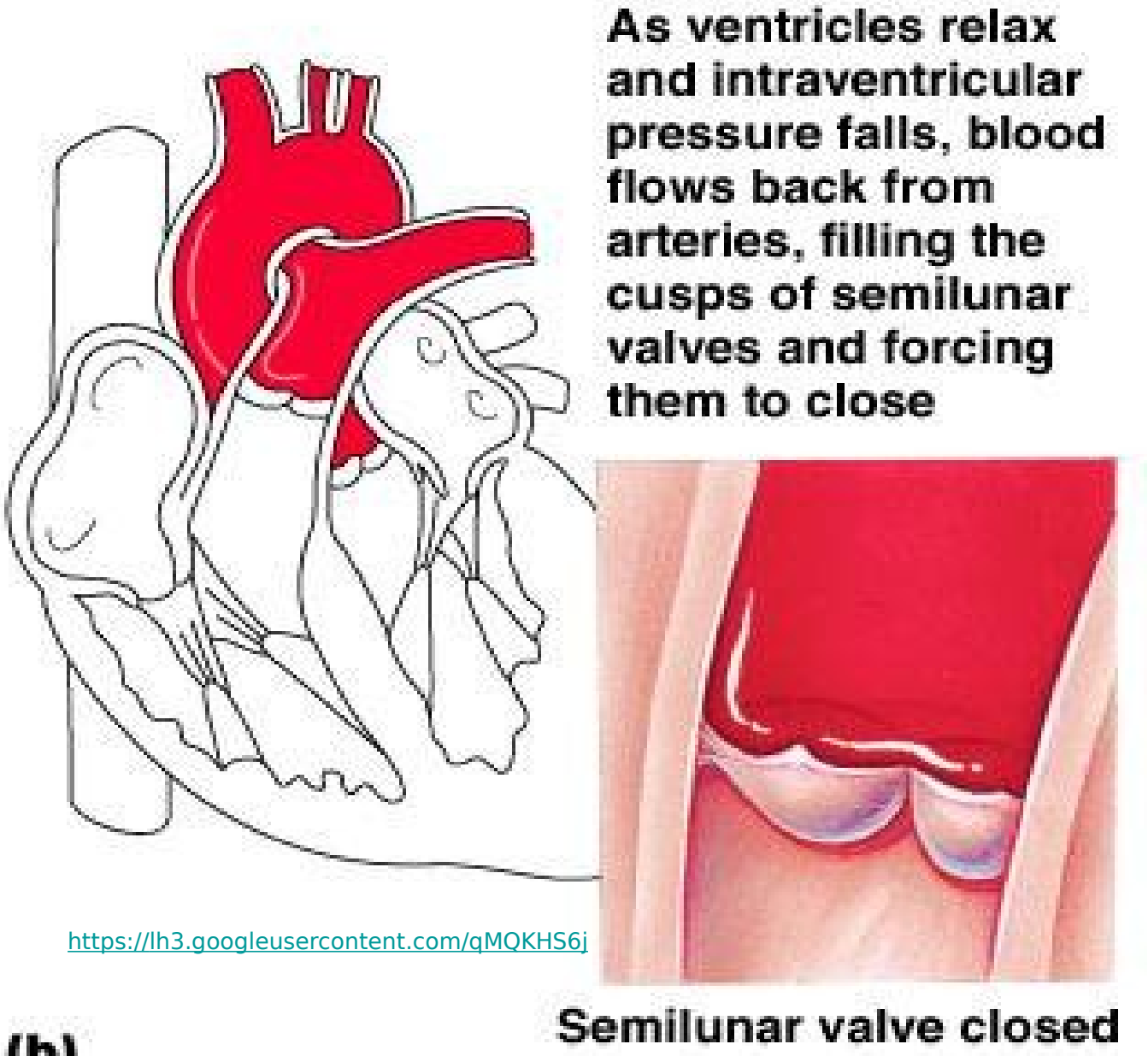

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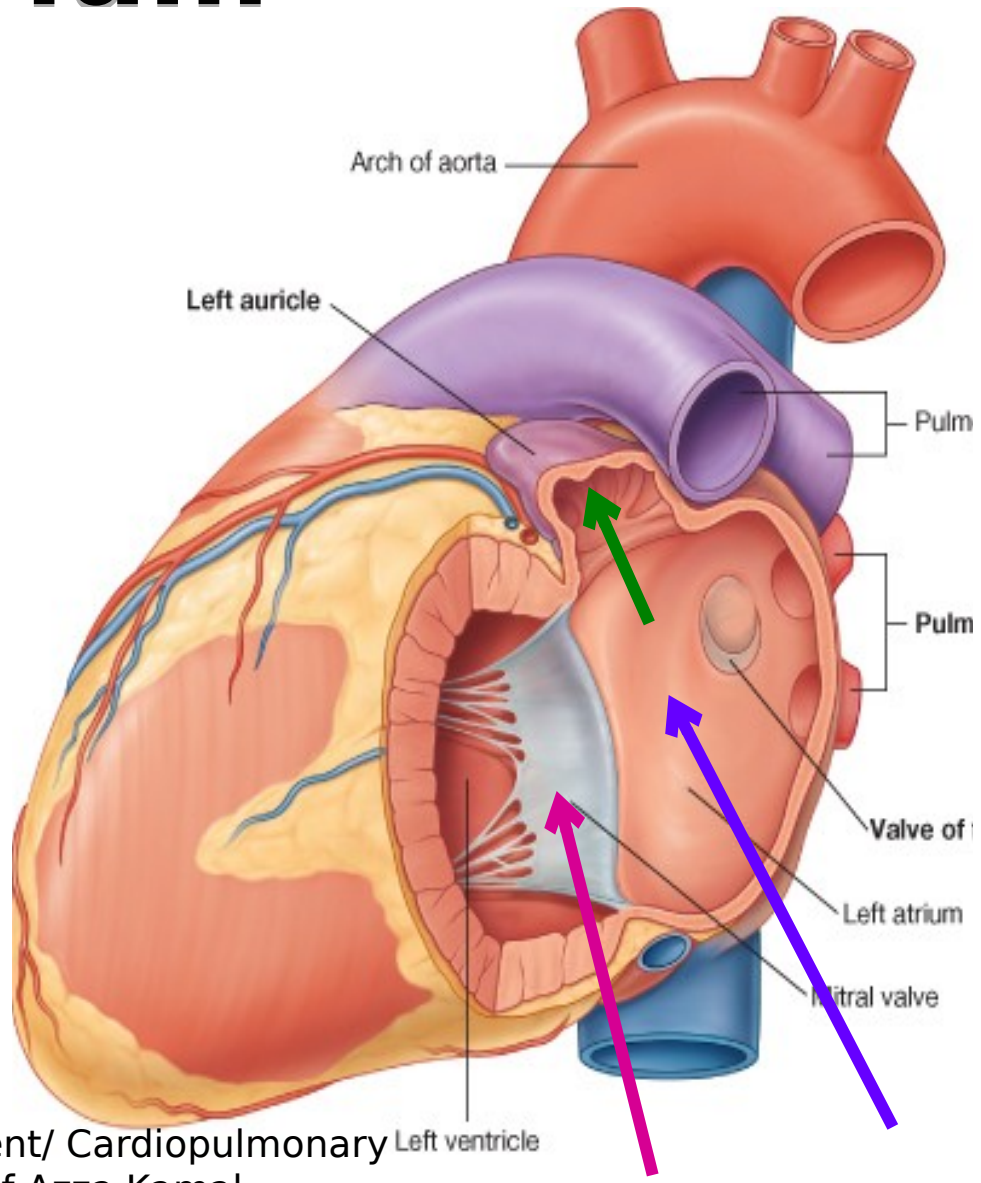
Interior of left atrium

- **Has a smooth wall, except few musculi pectinati in the left auricle**

- **Left atrioventricular orifice is guarded by a mitral valve which has 2 cusps (bicuspid)**



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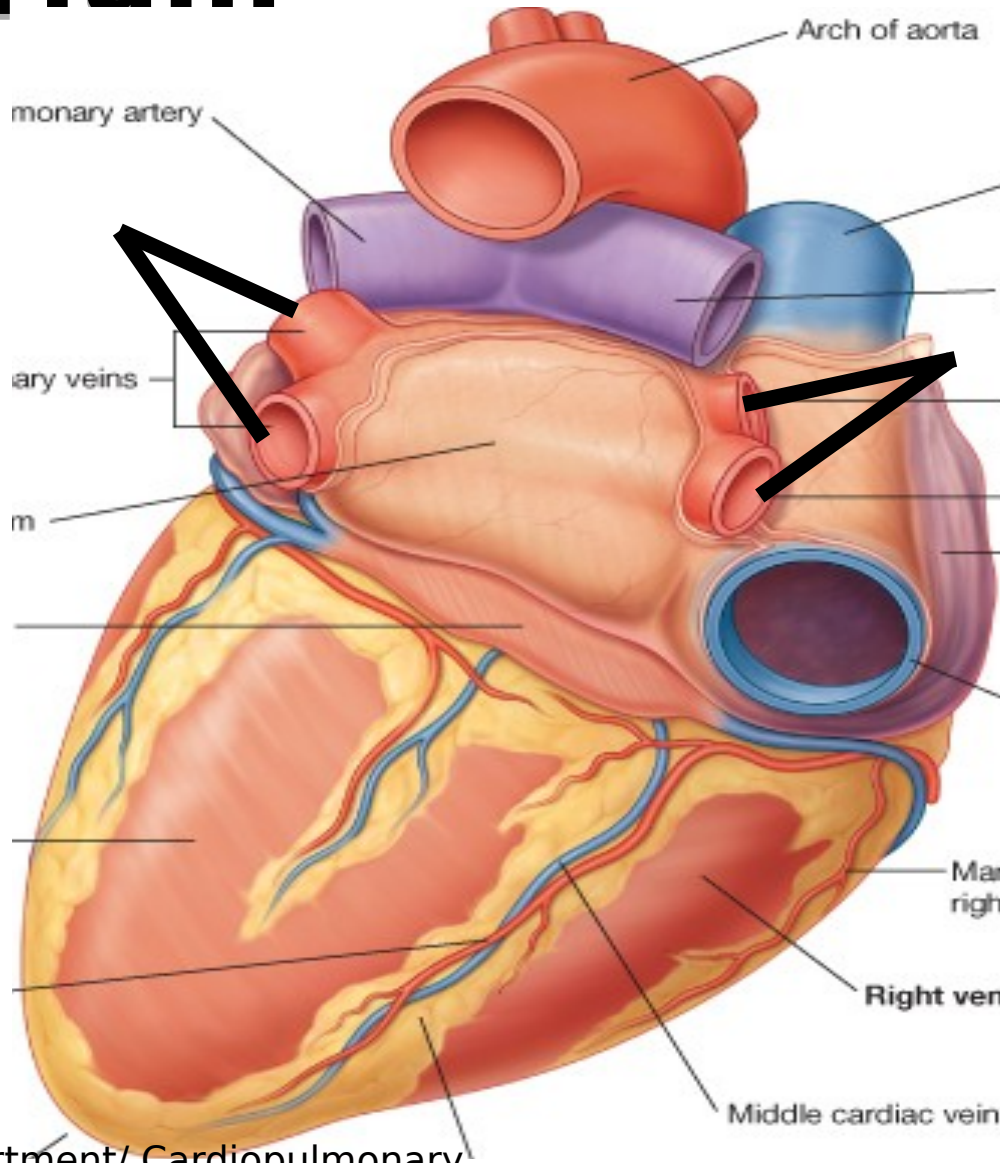
Veins opening into the left atrium

4 pulmonary veins (2 right & 2 left)



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Interior of left ventricle

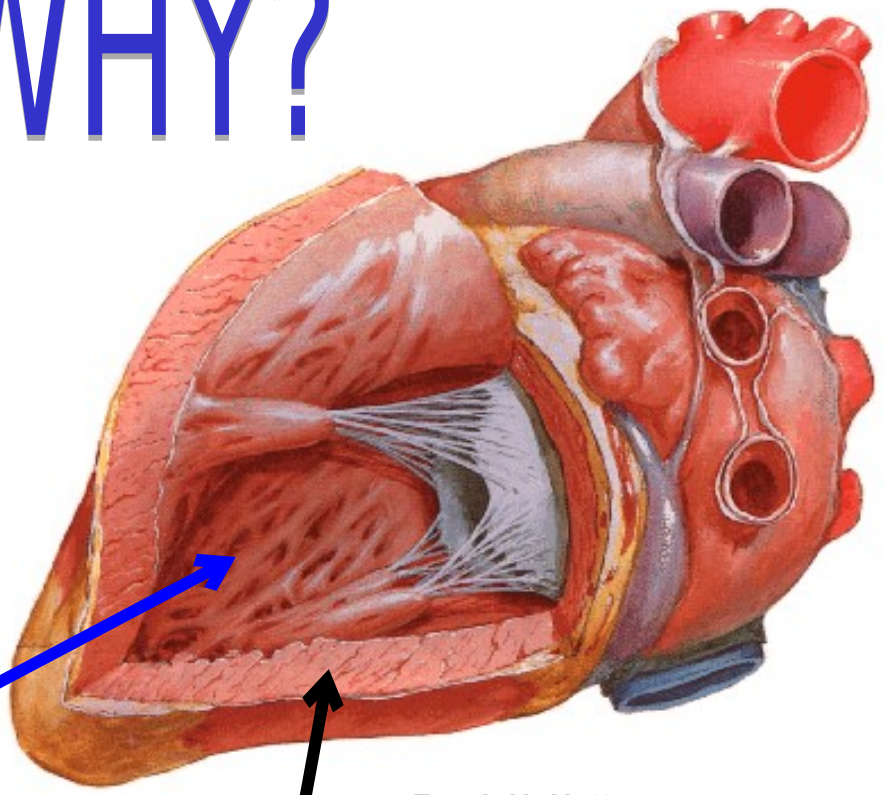
- **Its wall is 3 times thicker than the right ventricle .**

- **Its cavity is divided into rough inflowing part & smooth outflowing part below the aortic orifice**

Left Ventricle

Flap Opened in Posterolateral Wall

WHY?



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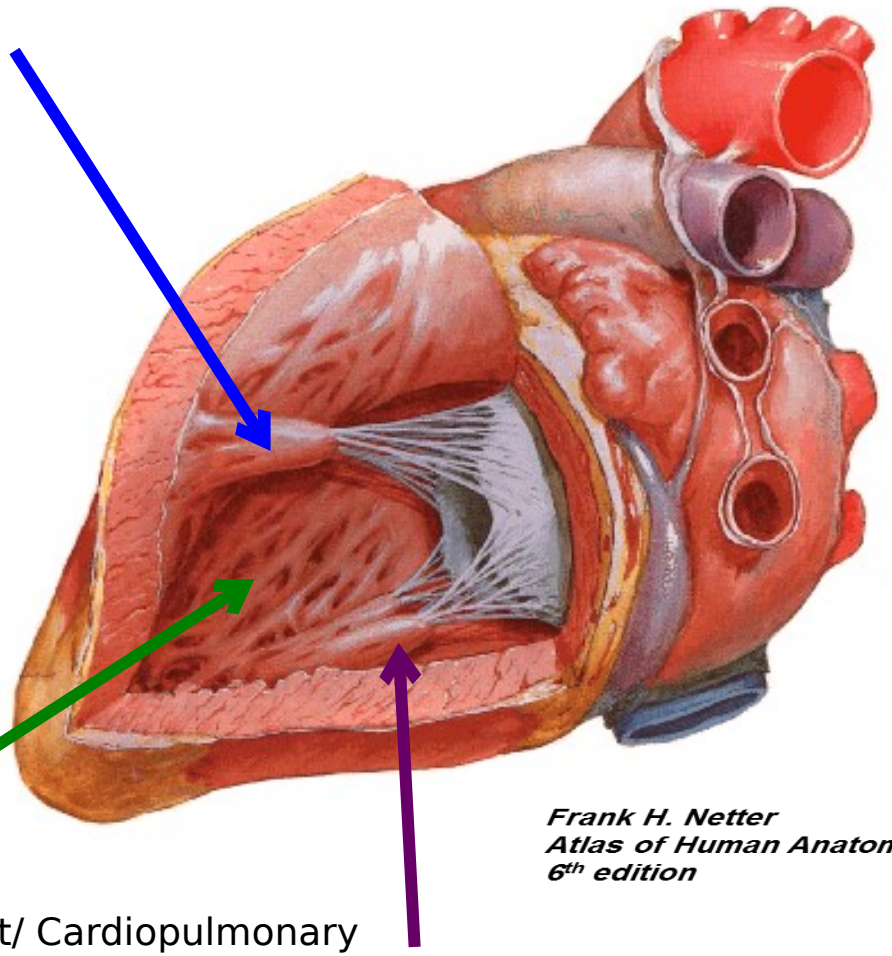
Interior of left ventricle

1. Rough inflowing part has trabeculae carni, 2 papillary muscles anterior & posterior ,but



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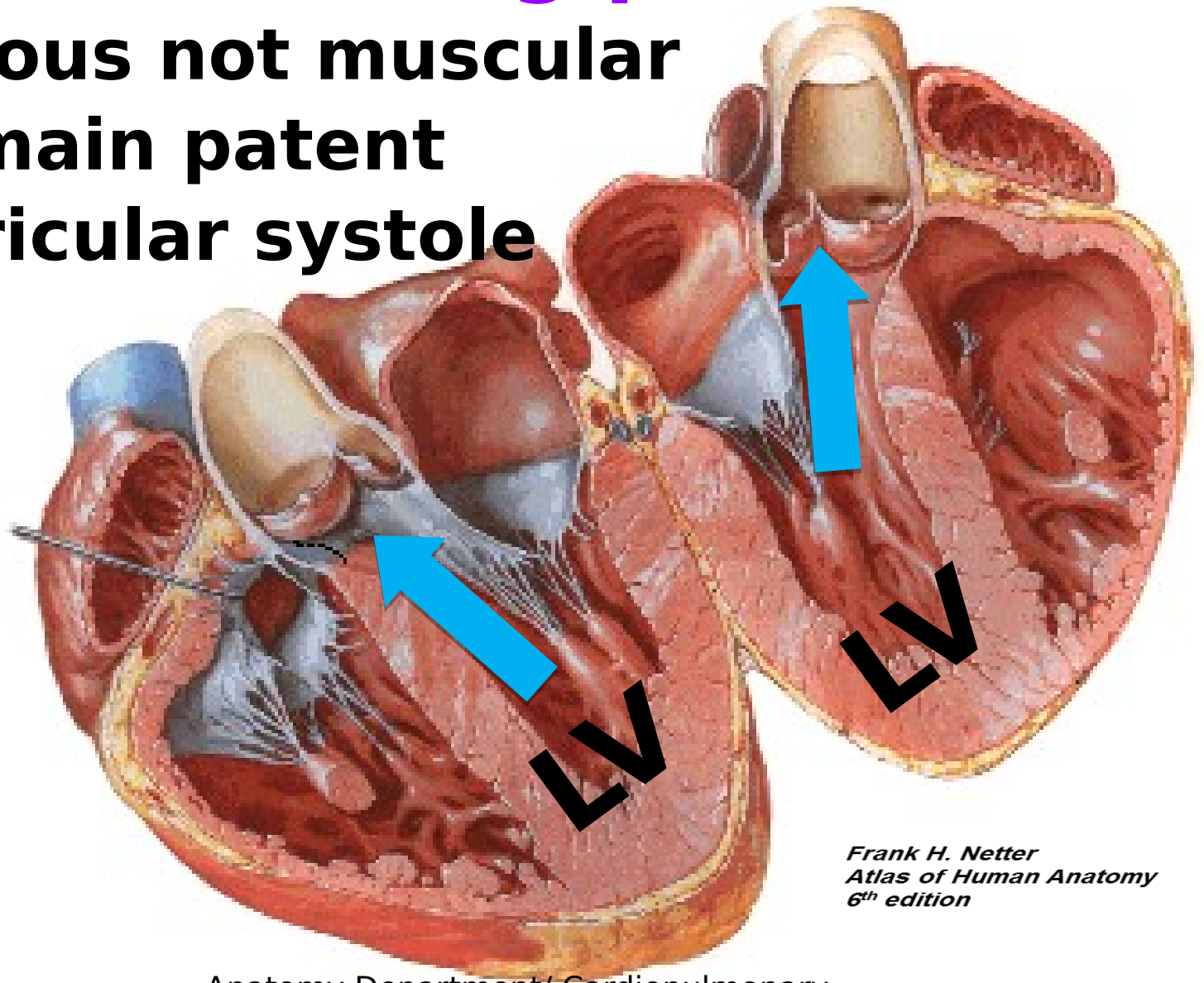
2. Smooth outflowing part (aortic vestibule)

made of fibrous not muscular tissue to remain patent during ventricular systole



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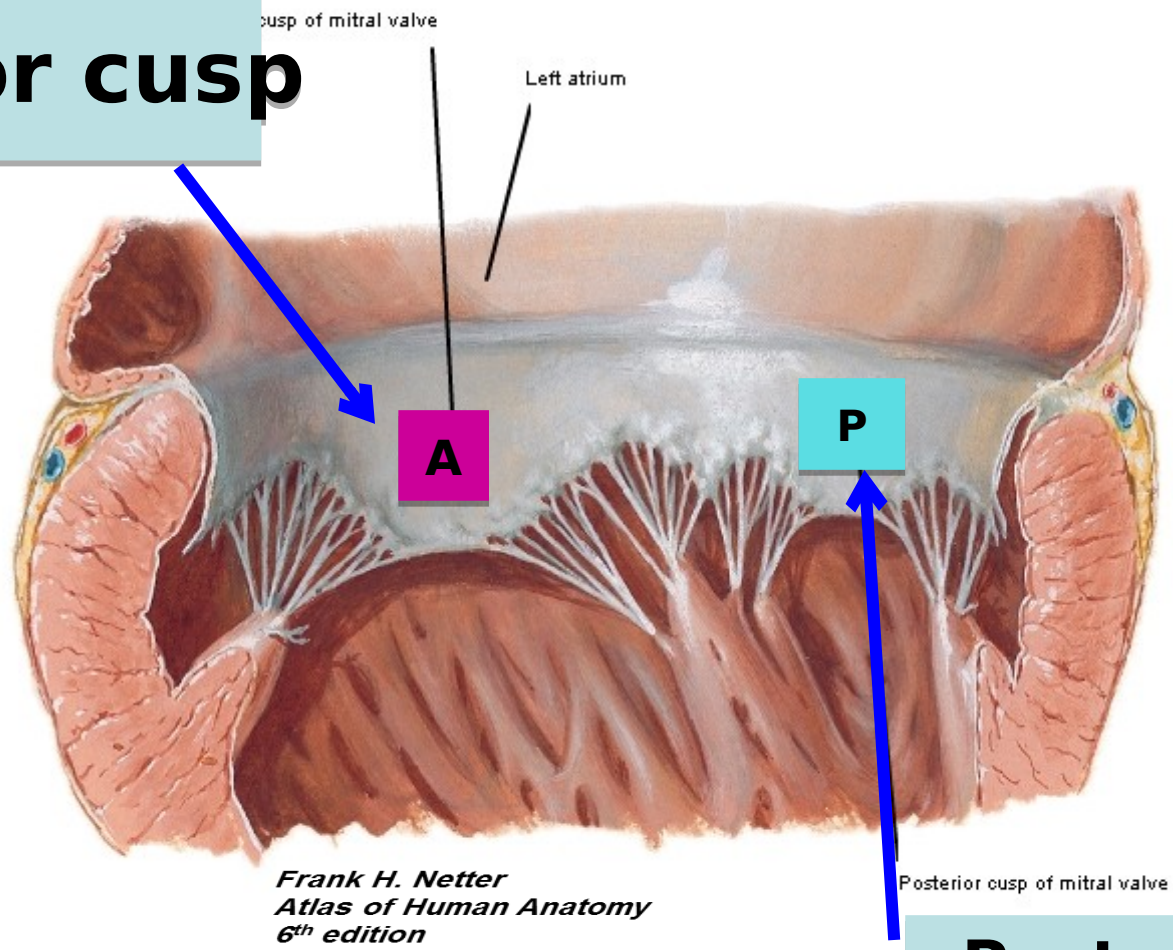
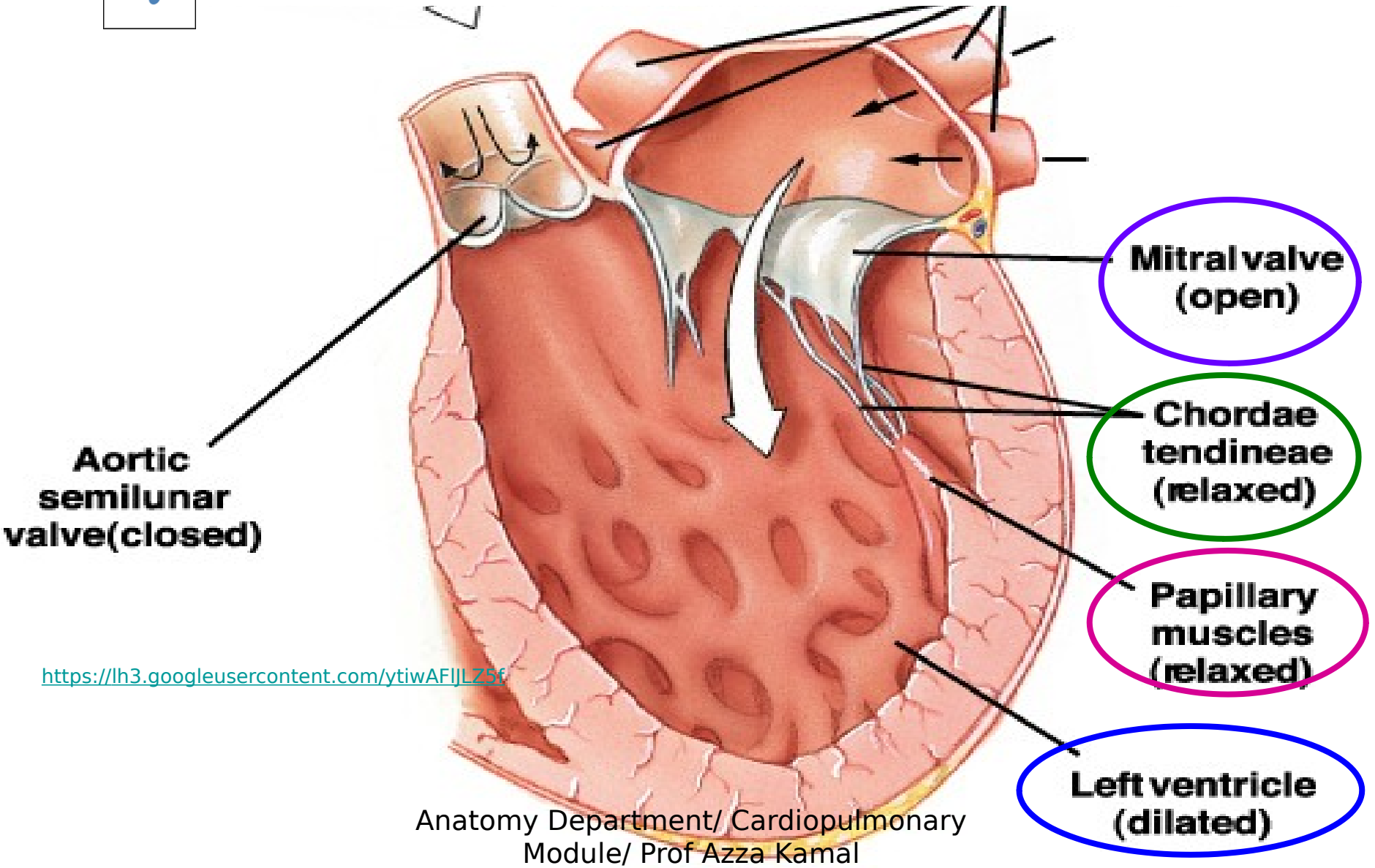
Biscuspid (mitral) valve

Anterior cusp



Posterior cusp

Opened mitral valve



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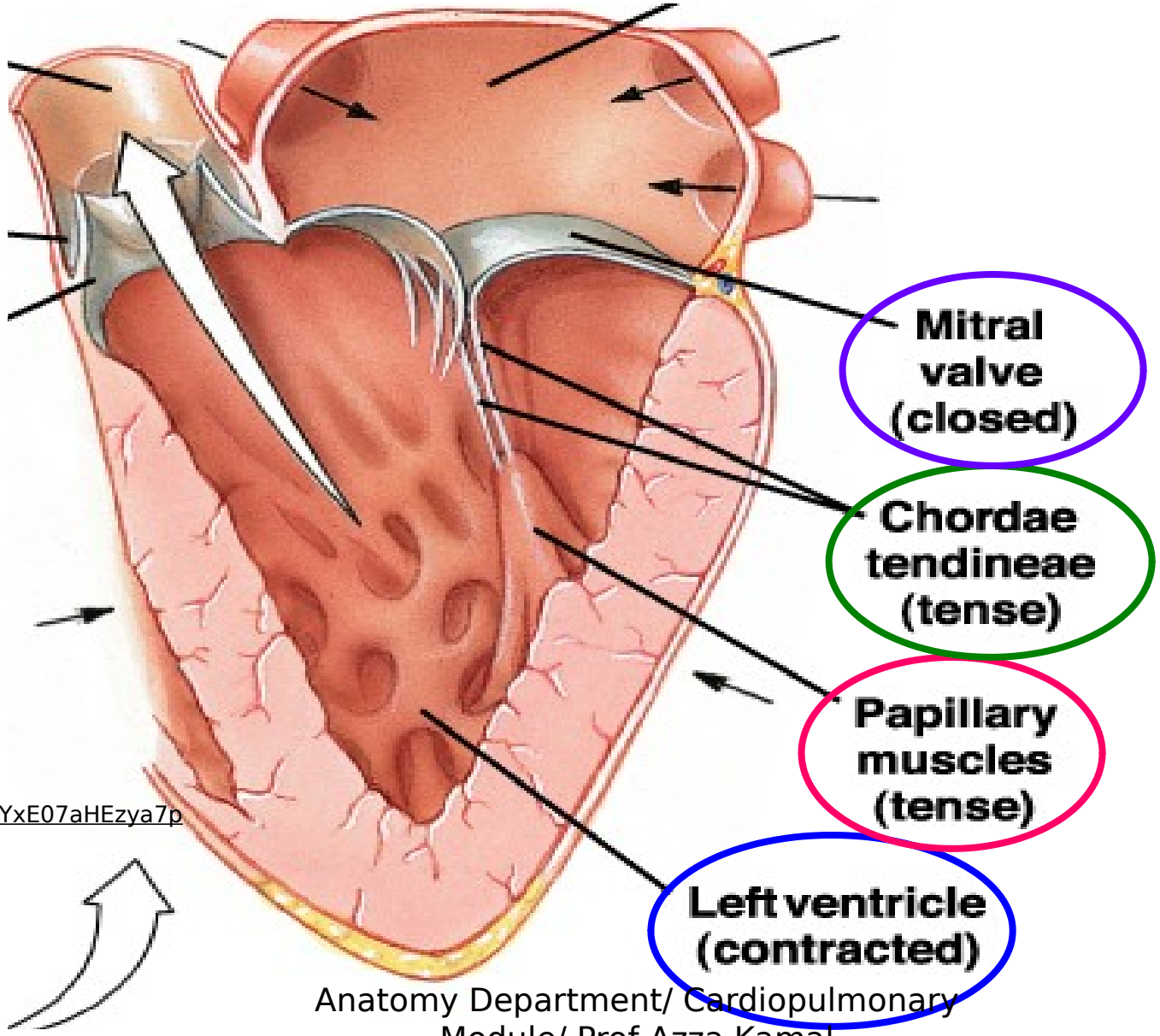
Closed mitral valve



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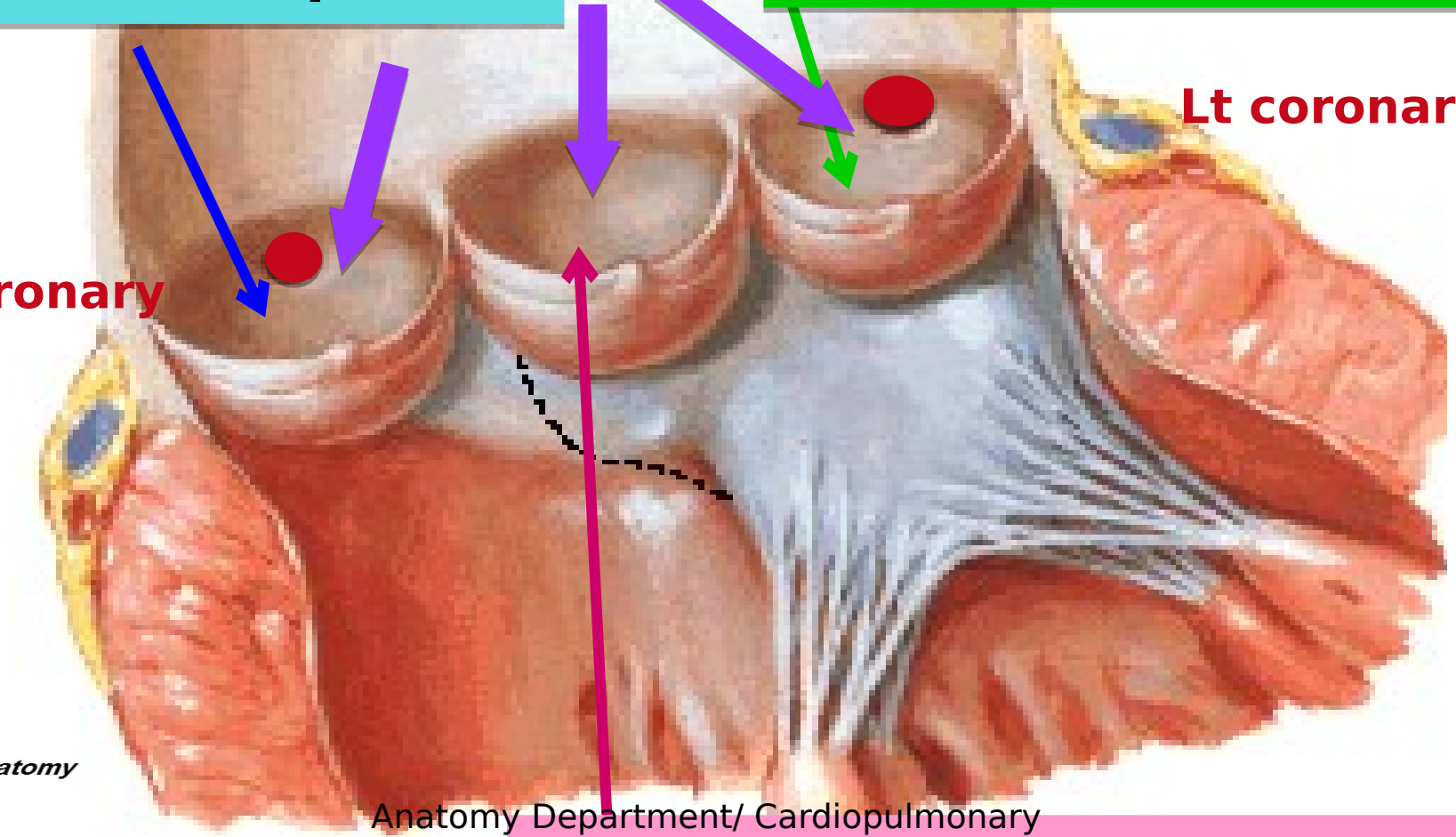
AORTIC VALVE
(above each aortic cusp is a dilatation called aortic sinus)

Anterior aortic cusp & sinus

Left posterior aortic cusp & sinus



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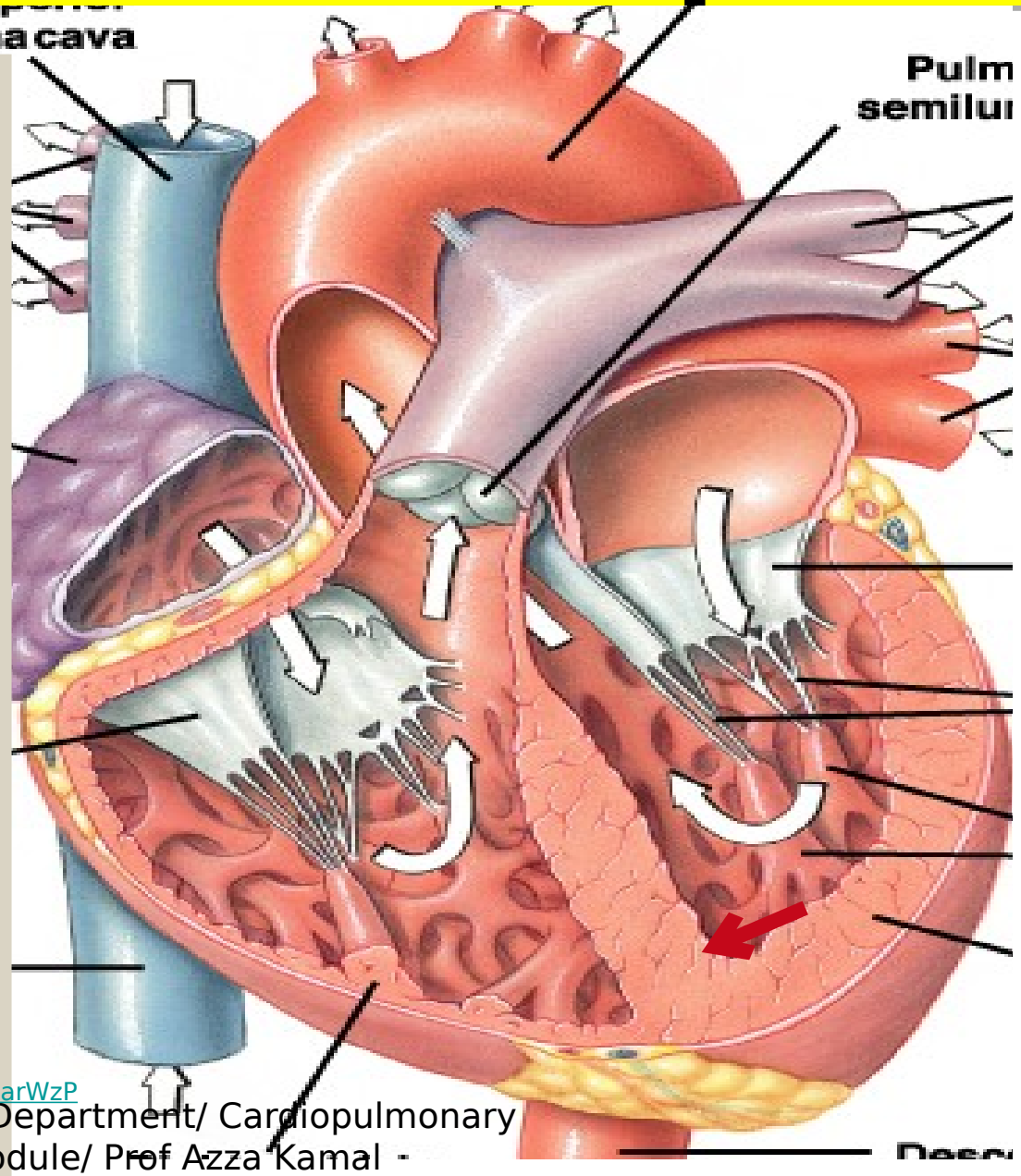
Right posterior aortic cusp & sinus

Interventricular septum

- Lies obliquely between rt & lt ventricles
- Formed of:

1. Lower muscular part
2. Upper membranous



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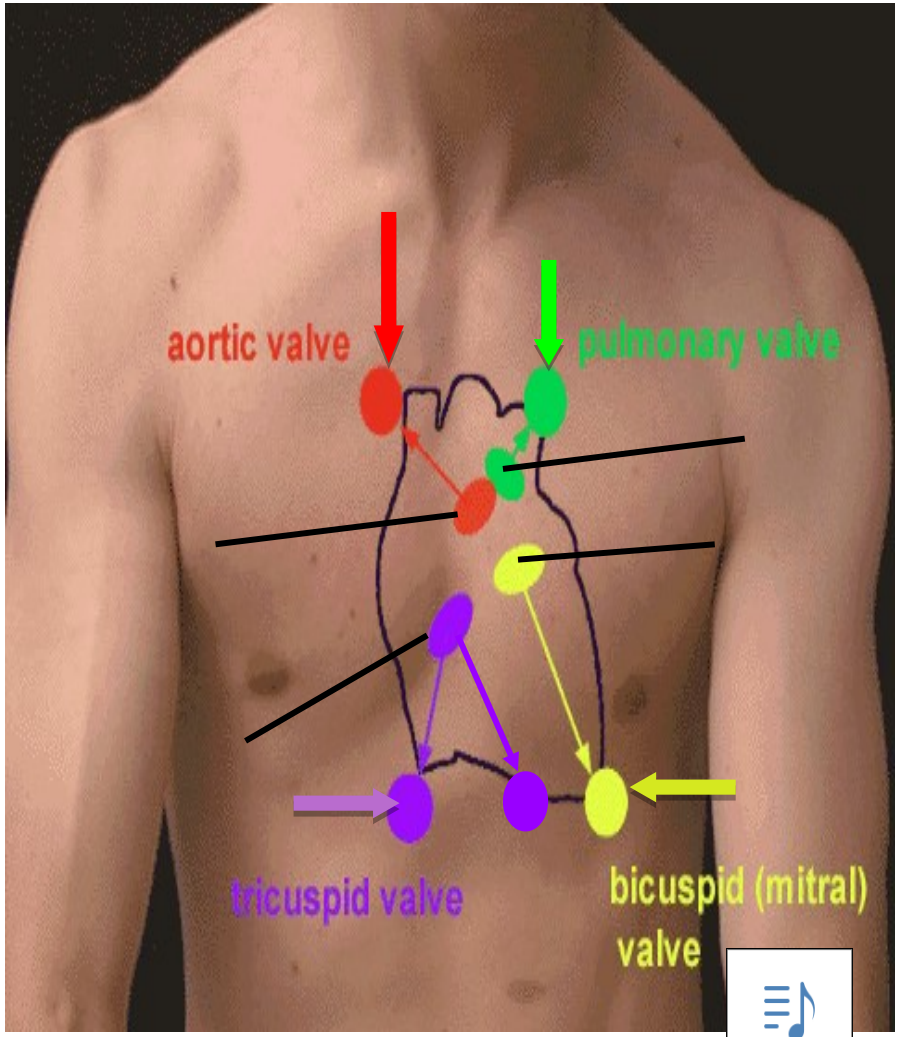
Surface anatomy of cardiac valves

Site of valve	Best heard at (auscultatory area)
Pulmonary at 3rd left sternocostal junction	Medial end of 2nd left space
Aortic at 3rd space left sternal border	Medial end of 2nd right space
Mitral at 4th left sternocostal junction	Apex of heart
Tricuspid at 4th space behind center of sternum	Xiphisternal junction or just to left of sternal border near 5th space



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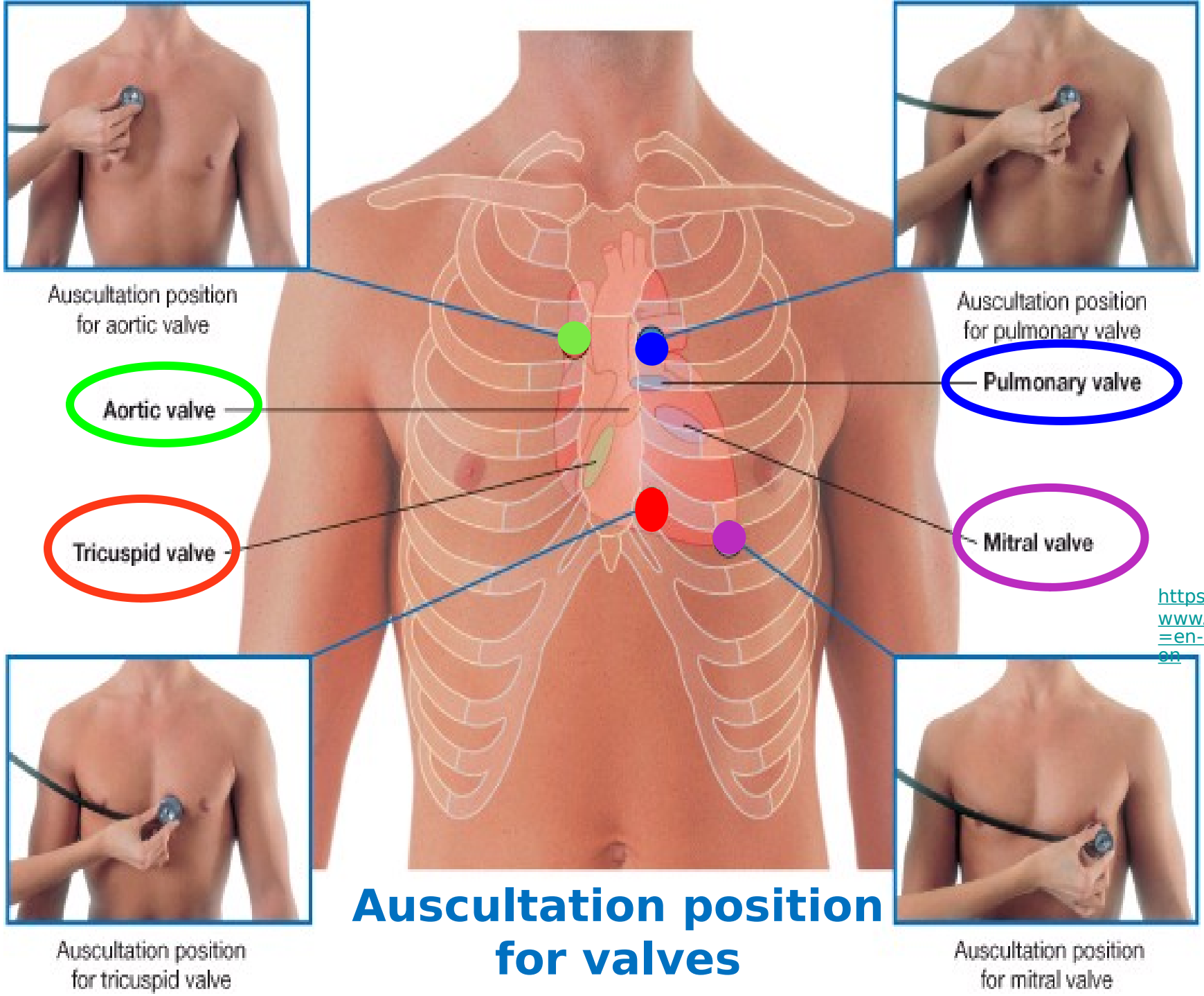
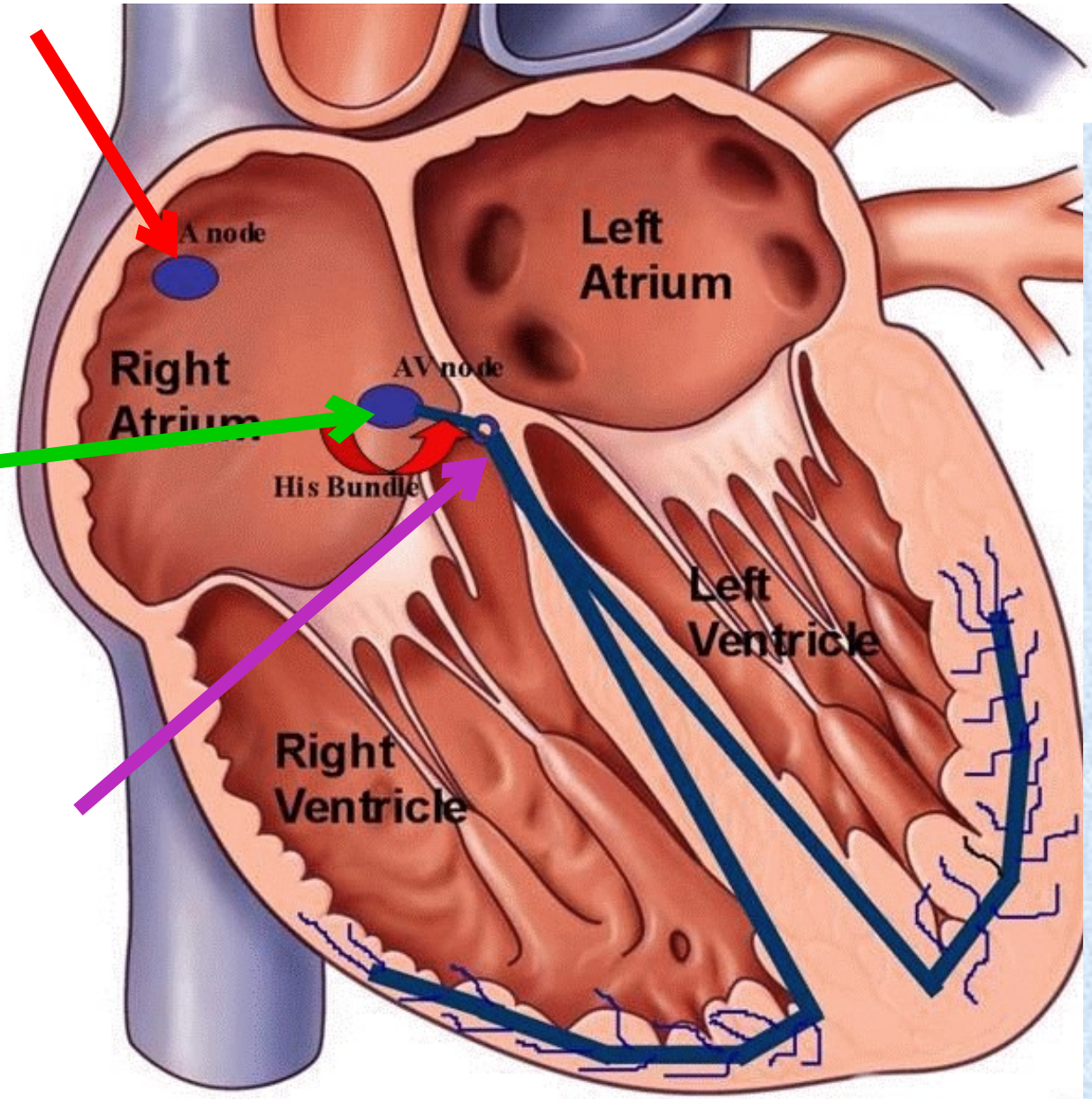


Auscultation position for valves

https://www.google.com.eg/search?sa=G&hl=en-EG&q=heart+sound+auscultation

1. **SA node** lies in lateral wall of right atrium at junction of SVC & rt atrium
2. **AV node** lies in lower part of interatrial septum near opening of coronary sinus
3. **AV bundle** descends from AV node to upper membranous part of interventricular septum



Conducting System of

https://www.google.com.eg/search?sa=G&hl=en-EG&q=right+atrium

Consists of modified cardiac muscle fibers which are responsible for initiation & propagation of

SA node

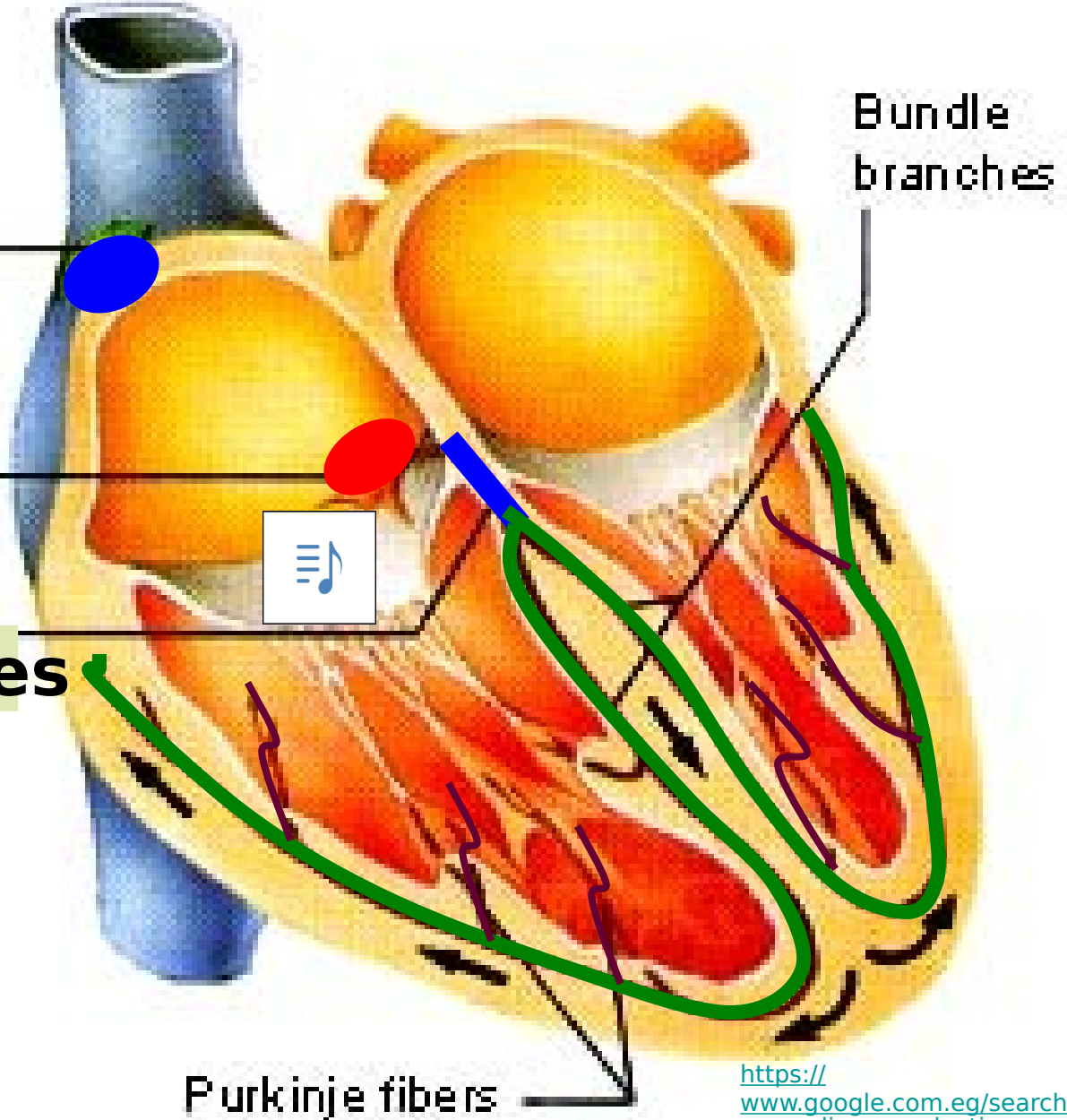
AV node

AV bundle

Rt bundle br

Lt bundle br

Purkinje fibres



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Which of the following can be seen ONLY in the right ventricle?

a) Interventricular septum
b) Moderator band
c) Anterior papillary muscle
d) Posterior papillary muscle
e) Trabeculae carnae

In the medial end of the right second intercostal space, you can auscultate which of the following valves?

a) Mitral
b) Tricuspid
c) Pulmonary
d) Aortic
e) Valve of coronary sinus

THANK YOU

Suggested Textbook:

Clinical Anatomy for Medical Students
Richard S.Snell
Pages 102- 109
111-112